



THE INNOVATION CATALYST

NOVEMBER 2020

VETERAN SPOTLIGHT — JOE FAMIGLIETTI

SPO is celebrating Veterans Day in the month of November to honor service members past and present for their hard work and dedication. We didn't have to look too far to find a veteran to celebrate – SPO's very own Joe Famiglietti served in the Navy in the 1980s as an electronics technician and reactor operator aboard the USS Honolulu, a Los Angeles class submarine.

As [SBIR/STTR](#) co-lead for NASA's Goddard Space Flight Center, Joe Famiglietti coordinates Goddard's participation in the agency's SBIR and STTR programs. Though Famiglietti's professional path led to NASA, his career began when he joined the military as a junior in high school. He excelled in math and science, and after speaking to a recruiter about the opportunities available through serving, Famiglietti enrolled in the Navy's nuclear program.

Once he completed his training, Famiglietti joined the crew of the USS Honolulu, spending months at a time underwater aboard the submarine. Though submarines have a reputation for being cramped, Famiglietti says he isn't claustrophobic and navigated the vessel's low ceilings and small bunks just fine. Famiglietti was stationed in Hawaii and traveled to Japan, Guam, the Philippines, and Micronesia during his tour.

He decided to leave the military when he returned from his tour so he could spend more time with his family. He earned a bachelor's degree in physics from George Mason University and joined a co-op program that allowed him to work at Goddard while earning his degree. Since then, Famiglietti has worked as an instrument developer, payload manager, and technology manager before transitioning to the SBIR/STTR realm.

Famiglietti says the discipline he learned in the military came in handy when he went to college.

"The focus mentality I gained from the military enabled me to do very well in college, which in turn showed that I had the competence and aptitude for work at Goddard," he adds.

Famiglietti has both a daughter and son-in-law currently serving in the military. Famiglietti says he's very proud of them, and though the phrase "thank you for your service" has become something of a cliché, he says, he thinks it's a nice way to show appreciation when it's said with sincerity.

SPO wishes all veterans a happy November – thank you for serving our country!



Photo Credit: NASA/Samantha Kilgore

National Aeronautics and Space Administration



NO LOLLYGAGGING. SUBMIT YOUR NTRS, DRAGONBORN.



Visit invention.nasa.gov to get started with your New Technology Report.
For more information, contact Scott Leonardi: robert.s.leonardi@nasa.gov.

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NATIVE AMERICAN HERITAGE REPRESENT
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NATIVE AMERICAN HERITAGE CULTURE COMMUNITY

November is National Native American Heritage Month!

As SPO observes this month celebrating the rich diversity of Native American culture, here are some resources for the Goddard community to learn more:

+ NATIVE AMERICAN FILM SERIES SPONSORED BY GODDARD'S EQUAL OPPORTUNITY PROGRAMS OFFICE (EVERY MONDAY AT 5 PM THROUGH THE MONTH OF NOVEMBER):
<https://ustream.tv/channel/nasa-gsfc>

+ INFORMATION ON GODDARD'S NATIVE AMERICAN ADVISORY COMMITTEE:
<https://eeo.gsfc.nasa.gov/sepm/native-americans>

+ CONTACT INFORMATION FOR GODDARD'S NATIVE AMERICAN PROGRAM MANAGER:
Tamara Jackson, 301-286-1091 or tamara.jackson@nasa.gov

+ LEARN MORE ABOUT THE HISTORY OF NATIONAL NATIVE AMERICAN HERITAGE MONTH:
<https://nativeamericanheritagemonth.gov/about/>

TECH TRIVIA TRANSFER

How much do you know about NASA technology transfer? Find out with our monthly quiz!



As of November 2020, how many software packages does Goddard have listed in NASA's online software catalog?

A. 102

B. 136

C. 155

D. 187



True or False: Innovators will receive award money for winning NASA's Software of the Year or Invention of the Year awards.

A. True

B. False



What Goddard-developed software won NASA's Software of the Year Award in 2020?

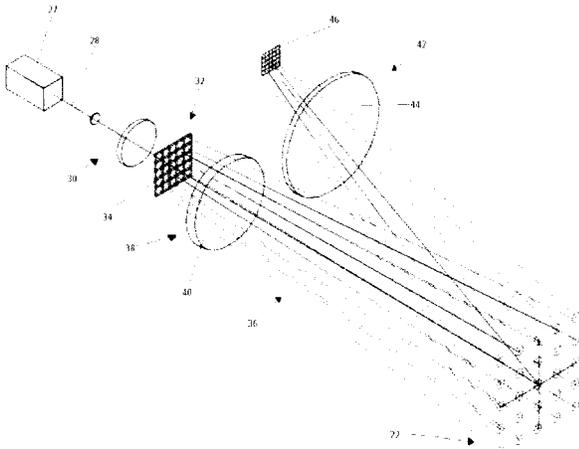
A. core Flight System

B. Worldview

C. General Mission Analysis Tool

D. Core Hierarchical Segmentation Software Package

GUESS THE PATENT DRAWING



CLUE ONE: It uses a simple lens system to simultaneously generate a one-dimensional or two-dimensional array of optical spots to illuminate an object, surface, or image to generate a topographic profile.

CLUE TWO: The technology has applications in remote sensing, machine vision, and robotic vision.

CLUE THREE: This technology was invented by emeritus Goddard innovator Michael Krainak.

+ WANT TO KNOW THE ANSWERS?

[Click here](#) for Tech Transfer Trivia and [here](#) for the Guess The Patent Drawing.

TAKE YOUR SBIR/STTR AWARD TO THE NEXT LEVEL

DO YOU USE SBIR/STTR AWARDS TO SUPPORT/SUPPLEMENT YOUR RESEARCH, PROJECTS, OR FLIGHT MISSIONS?

If so, NASA's SBIR/STTR program currently has several initiatives to provide financial support of up to \$3 million to SBIR/STTR firms for further development towards infusion and/or commercialization. These are our Post Phase II opportunities, and we are hoping the Goddard's community will utilize them to further advance our technology needs and development.

CIVILIAN COMMERCIALIZATION READINESS PILOT PROGRAM (CCRPP)

Overview: With the application period now open, the CCRPP allows the SBIR/STTR program to provide 1:1 matching funding (between \$500,000 and \$3 million) to eligible firms. This funding vehicle's primary objective is accelerating the near-term transition of SBIR- and STTR-funded technologies to infusion and/or commercialization (not an incremental improvement in technology maturation alone).

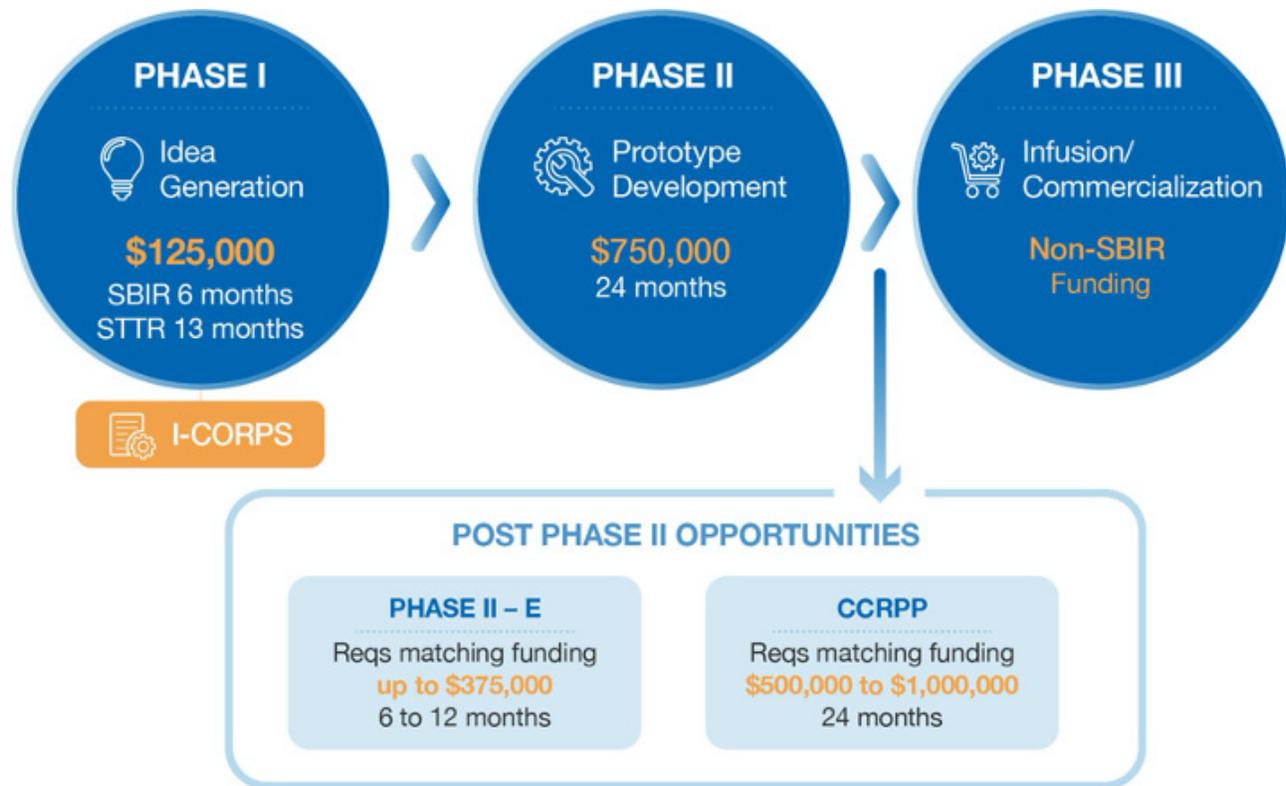
Eligibility: Firms are eligible for the FY21 application period if they have:

- + SBIR/STTR Phase II awards resulting from Phase I awards starting in Program Year 2010 or later and whose base Phase II period of performance is complete by Dec. 7, 2020
- + Companies with ongoing or completed NASA SBIR/STTR Sequential Phase II awards from FY19 to present
- + Companies with Phase IIs from other government agencies from FY11 to present are also eligible

PHASE II-E

Overview: The objective of the Phase II-E option is to further encourage the advancement of innovations developed under Phase II via an option to further R/R&D efforts underway on active Phase II contracts that are in good standing with NASA. This provides 1:1 matching (up to \$375,000) to eligible firms.

Eligibility: If a firm has an active Phase II contract, the submission period for a Phase II-E starts after the 12th month of performance and ends 60 days before the contract end date.



EXTERNAL VERSION 20-002

TAKE YOUR SBIR/STTR AWARD TO THE NEXT LEVEL *(cont'd)*

PHASE III

Overview: Phase III is the commercialization of innovative technologies, products, and services resulting from either a Phase I or Phase II contract. This includes further development of technologies for transition into NASA programs, other government agencies, or the private sector.

Eligibility: A Phase III contract can be awarded at any time directly with a Phase I or Phase II awardee.

POST PHASE II SUCCESS: Freedom Photonics

In collaboration with Goddard innovator Mark Stephen, Freedom Photonics was able to leverage a Phase II-E for their project called "A Widely Tunable Semiconductor Laser at 1690 Nanometers for Remote Sensing." This work purposes to expand Goddard's greenhouse lidar remote sensing capabilities of ground vegetation, ice, and snow to the measurement of gas molecules, with NASA having an interest in trace and atmospheric gases. Commercially, the broad tuning range was the key enabler for Freedom Photonics to infuse their technology into novel commercial applications. Their laser technology is currently infused in a family of gas analyzers from an external partner, which are commercially available for measuring harmful but common industrial gases.

ARE YOU COMPLETELY NEW TO SBIR/STTR?

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs fund small business's research, development, and demonstration of innovative technologies that fulfill NASA needs, as described in the [Annual Solicitations](#), and have significant potential for successful commercialization. In short, NASA lets the nation's small business community know about the agency's needs and funds businesses that demonstrate the ability to meet those needs through a variety of funding vehicles.

HAVE YOU UTILIZED SBIR TECHNOLOGY?

We would like to hear from you! Please send us any successes you've had with SBIR technologies. Your work will be featured as an SBIR success story.

Reach out to Goddard's SBIR/STTR office with any questions:

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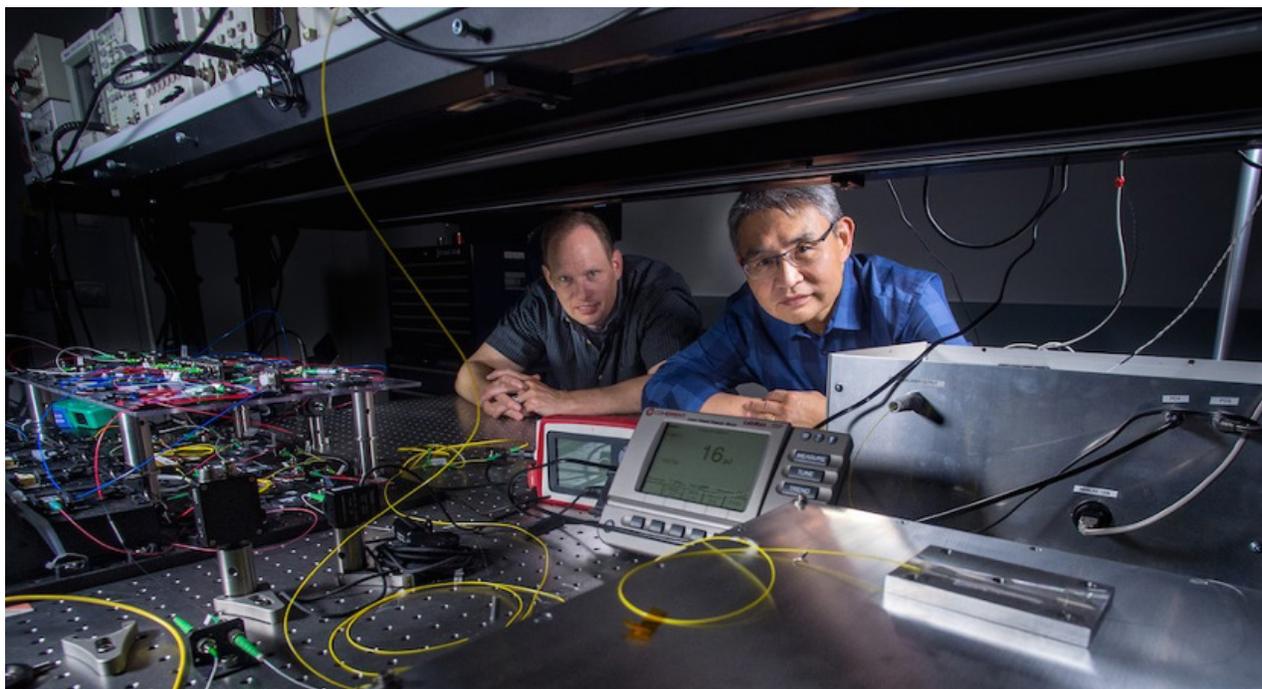


Photo: Mark Stephen and Tony Yu, both prolific participants in NASA's SBIR/STTR program, are shown here with NASA's CO2 Sounder Lidar. Credit: NASA/Bill Hrybyk

GET TO KNOW SPO **ERIN MAJEROWICZ**



POSITION:
**Technology Liaison
Specialist**

**HOW MANY YEARS
THEY'VE BEEN AT
NASA: 10 years**

FAVORITE PART OF THE WORK DAY

I love when I have the chance to get really creative. Whether it's a great brainstorming session where the ideas are flying or it's creating a new challenge or project. I think that idea formulation piece is both fun and important!

STAR WARS OR STAR TREK

Star Wars – I grew up watching the original movies with my family.

VIDEO GAMES OR BOARD GAMES

Board games (Clue is my all-time favorite – any challengers?!)

BIGGEST PET PEEVE

I'm sure this is a common one, but slow drivers in the left lane is a BIG pet peeve of mine. It drives me bonkers!

FAVORITE QUOTE OR JOKE

"The greatest thing you'll ever learn is just to love and be loved in return." I heard this quote years ago in the movie Moulin Rouge and it has always stuck with me. It originally came from Nat King Cole's song, "Nature Boy."

MOST OBSCURE TALENT

I recently discovered that I'm actually pretty good at building and refinishing things. I've done a ton of projects so far this year (good ol' quarantine). A lot of them have been outside – things like building some retaining walls in my backyard, landscaping, and creating outdoor steps. I've also refinished two bathrooms and opened up an Etsy shop (Scoobie's Crafts, after our pup who loved to put her paw print on everything) where we create and sell home décor and fun custom tumblers. I really enjoy seeing how some of my crazy ideas turn out – so far, so good!

Photo courtesy Erin Majerowicz

TECH MANAGER SPOTLIGHT MANOHAR DESHPANDE

WHAT PAST ACHIEVEMENT HAS MADE YOU THE MOST PROUD?

While working at NASA's Langley Research Center, a team of engineers was tasked to determine whether an electromagnetic interference (EMI) was the cause of a TWA 800 mid-air explosion in 1996. I was a member of that team with the responsibility of performing EMI estimation. In the region where this mid-air explosion occurred, there were military surveillance radars operating with high power. I developed a simple but very accurate aircraft model to estimate electromagnetic field penetration through the aircraft windows and other openings. This allowed me to estimate induced voltages on the aircraft wiring leading into the fuel tank. Under a number of possible scenarios, I showed that the induced voltage in the fuel tank wiring was an order of magnitude less than the required voltage for an electric spark within the fuel tank wiring. This work helped the NASA authority to conclude that EMI did not play any role in the mid-air explosion of the TWA 800 flight. For this work, the team was awarded NASA Langley's highest H.J.E. Reid Award (2000). Receiving that award was my most satisfying and proudest accomplishment.

WHAT ARE YOU LOOKING FORWARD TO ACCOMPLISHING IN THE FUTURE?

Biologically, I am almost at the end of my technical career. However, with my healthy life style (strictly vegetarian, regular exercise, etc.), I feel I have another decade to work on solving the problems that will be beneficial for humanity. For example, the problem of predicting earthquakes (their location and time) at least a few days in advance. These earthquakes occur because of movements in Earth's internal structure. When this happens, it creates anomalies in Earth's magnetic field. NASA has decades of data about Earth's magnetic field on a global scale. In addition, the U.S. Geological Survey keeps records of earthquakes over the entire Earth's surface. My goal is to use this vast amount of past data to establish accurate correlation between these magnetic anomalies and earthquakes using advanced AI/Machine Learning tools. It is a hard task, but I have plans to work on it during my spare time.

CODE(S):
560

HOW MANY YEARS THEY'VE BEEN AT SPO: 3 years

Photo Credit: NASA/Samantha Kilgore & NASA/Hubble Telescope

IF SPO HAD A MASCOT, WHAT ANIMAL WOULD IT BE AND WHAT WOULD ITS NAME BE?

I like elephants. I read somewhere that the elephants are more intelligent than most other living things (including humans). I would name it "Universe."

DESCRIBE YOUR HOME OFFICE. DO YOU MISS YOUR WORK OFFICE?

We have been working from home for about eight months. This has resulted in some positives as well as negative experiences. Since most of my work is related to mathematical modeling and computer simulation, I did not feel that I have missed anything there. One thing that I feel I have missed during this teleworking period is meeting with friends and coworkers, sharing jokes and other experiences with them. As far as my home office is concerned, it is as good as my office at center, if I do not take into account family interruptions.

WHAT ARE YOU MOST LOOKING FORWARD TO AFTER THE PANDEMIC IS OVER?

I am not positive about the situation with the pandemic. I'm not sure if we will be completely free of this pandemic. Once it has infected humanity, it will be difficult to separate it from us. We may have to live with face masks and hand gloves. We will be scared to shake hands with anyone. As our lifestyle has permanently changed after 9/11, I think this will be another life-changing event.

WHO DO YOU LOOK UP TO?

I do not look up to any special person or special event. I am of the opinion that I will be able to learn something new from each person with whom I come in contact or have an opportunity to work with. So I look up to everyone.

WHAT DO YOU LOOK FORWARD TO AT THE END OF THE WORK DAY?

I look forward to new things at the end of each day. If I look forward to only one thing, that will be boring after few days. On some days, I look forward to playing tennis. If it is cold and raining, then I look forward to playing ping-pong. Some days I want to go swimming. In the summer, I like to get my hands dirty with garden work.

